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Question Paper Code : 50787

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2024.

Fifth/Sixth Semester

Mechanical Engineering

CME 396 – PROCESS PLANNING AND COST ESTIMATION

(Common to : Industrial Engineering and Management/ Manufacturing Engineering / Mechanical Engineering (Sandwich) / Mechanical and Automation Engineering / Mechatronics Engineering/ Robotics and Automation)

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define process planning and write about its significance in manufacturing.
2. List the key steps involved in process selection.
3. Mention the importance of calculating process parameters for various production processes.
4. What factors are considered in the selection of jigs and fixtures for manufacturing processes?
5. Why is costing and estimation important in manufacturing?
6. Specify the elements involved in the allocation of overhead charges in cost estimation.
7. State the process of estimating production costs for different types of jobs in a forging shop.
8. Identify the key factors to consider when estimating production costs in a welding shop.
9. Why is machining time calculation important in manufacturing processes?
10. List the steps involved in calculating machining time for any two lathe operations.

PART B — (5 × 13 = 65 marks)

11. (a) Describe the methods of process planning in detail, highlighting their advantages, disadvantages.

Or

- (b) Discuss the criteria used to evaluate materials for specific manufacturing processes, and how material selection impacts product quality, cost, and performance.

12. (a) Discuss the economic considerations involved in process planning decisions.

Or

- (b) Explain how optimizing process parameters, selecting appropriate equipment, and implementing efficient production methods can impact overall production costs and profitability.

13. (a) Discuss various methods of costing, such as job costing, process costing and activity-based costing, highlighting their differences and suitability for different types of manufacturing processes.

Or

- (b) Estimate the production costs for different types of manufacturing shops, including forging, welding, and foundry operations.

14. (a) Discuss the specific challenges and considerations involved in estimating production costs for different types of jobs in forging, welding, and foundry shops.

Or

- (b) Propose innovative strategies and techniques for enhancing the accuracy and reliability of cost estimation in forging, welding, and foundry shops.

15. (a) Outline the strategies and techniques for calculating machining time in manufacturing processes.

Or

- (b) Discuss the significance of machining time calculation. How machining time is calculated for milling, shaping and grinding?

PART C — (1 × 15 = 15 marks)

16. (a) Evaluate the challenges and limitations of machining time calculation and propose innovative solutions for overcoming them.

Or

- (b) Discuss how accurate cost estimation contributes to strategic decision-making, cost control, and profitability. Illustrate the importance of costing in product pricing, budgeting, financial analysis, and performance evaluation.
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